UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LARRY L. BRADFORD, EMANUEL PINZONI, BARBARA A. WILLIAMS and THEODORE HALCHAK

Appeal No. 2005-1604
Application No. 09/392,434

ON BRIEF

Before KRATZ, TIMM, and FRANKLIN, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-3, 5-11, 13 and 14, which are all of the claims pending in this application.

BACKGROUND

This is the second appeal involving the subject matter of this application, as noted by appellants at page 2 of the brief. In a decision mailed on March 18, 2003 (Appeal No. 2003-0363), a panel of the Board of Patent Appeals and Interferences affirmed the examiner's obviousness rejections. Those affirmed rejections

were based on the same prior art that the examiner continues to rely on in the rejections under review in this appeal.[1]

Appellants' invention relates to a polyurethane foam including a flame retardant blend. The blend includes a non-oligomeric, non-halogenated phosphate ester that contains alkyl groups and an oligomeric, non-halogenated organophosphate flame retardant material. The claimed subject matter before us here differs from that involved in that earlier appeal primarily in that independent claims 1 and 9 (hence all of the appealed claims) now specify that the oligomeric component (b) is limited by a hydroxyl number requirement. A further understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

> 1. A polyurethane foam that contains an effective amount for flame retardancy of a flame retardant blend consisting essentially of: (a) a non-oligomeric, non-halogenated, alkyl group-containing phosphate ester flame retardant; and (b) an oligomeric, non-halogenated organophosphate flame retardant having a phosphorus content of no less than 10%, by weight, a hydroxyl number of no more than about 30 mg KOH/g, and at least three phosphorus atom-containing units therein.

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[1]In that prior appeal, the then appealed dependent claims 7, 8, 13 and 14 were subject to rejection under 35 U.S.C. § 103(a) by the examiner on an alternative basis in addition to being rejected as obvious over Sicken in combination with the same references applied by the examiner in rejecting the current appealed dependent claims 7, 8, 13 and 14.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Fearing (Fearing '534)	4,199,534	Apr. 22, 1980
Fearing (Fearing '633)	4,268,633	May 19, 1981
Hardy et al. (Hardy '042)	4,382,042	May 03, 1983
Hardy et al. (Hardy '035)	4,458,035	Jul. 03, 1984
Keppeler et al. (Keppeler)	5,981,612	Nov. 09, 1999 (filed Oct. 29, 1997)
Sicken et al. (Sicken)	5,985,965	Nov. 16, 1999 (filed Feb. 11, 1997)

Claims 1-3, 5, 6 and 9-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fearing '534 or Fearing '633, each further in view of Keppeler. Claims 1-3, 5-7, 9-11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicken in view of Keppeler. Claims 7, 8, 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sicken in view of Keppeler and Hardy '042 or Hardy '035.

We refer to appellants' briefs and the examiner's answer and final rejection for a complete exposition of the opposing viewpoints of appellants and the examiner.

OPINION

Upon review of the record before us in this appeal, we find ourselves in agreement with the examiner's determination that the applied prior art renders the claimed subject matter prima facie

obvious in accordance with the provisions of 35 U.S.C. § 103(a) substantially for the reasons set forth in the answer.

Moreover, we agree with the examiner's conclusion that appellants' arguments are insufficient to successfully rebut the prima facie case of obviousness made out by the examiner. Consequently, we shall sustain the examiner's obviousness rejections for essentially those reasons expressed in the examiner's answer, and we add the following primarily for emphasis.

Regarding the examiner's § 103(a) rejection of claims 1-3, 5, 6, 9-11 over the applied Fearing patents in combination with Keppeler and the examiner's § 103(a) rejection of claims 1-3, 5-7, 9-11 and 13 over the applied Sicken patent in combination with Keppeler, we note that appellants have not separately argued the patentability of each claim for either of those rejections. Accordingly, we select claim 1 as the representative claim on which we shall decide this appeal as to each of those separate grounds of rejection. See 37 CFR § 1.192(c)(7) and (c)(8), as in effect at the time of filing the brief in this appeal. Also, see In re McDaniel, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002) ("if the brief fails to meet either requirement, the Board is free to select a single claim from each group of claims

subject to a common ground of rejection as representative of all claims in that group and to decide the appeal of that rejection based solely on the selected representative claim").

Concerning the examiner's obviousness rejection over Sicken and Keppeler, the examiner (answer, pages 6 and 7) has reasonably determined that Sicken discloses the use of oligomeric flame retardants corresponding to appellants' component (b) in polyurethane foams and teaches that other flame retardants may be used as a blend therewith. See, e.g., column 1, lines 7-10 and column 2, line 32 through column 4, line 63 of Sicken.

According to the examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention to select a conventional non-oligomeric, non-halogenated phosphate ester containing an alkyl group as the other flame retardant to be blended with the oligomeric flame retardant in Sicken. This is so according to the examiner because such non-halogenated phosphate esters were widely known as being useful as flame retardants for polyurethane foams, as evidenced by Keppeler. See column 7, line 33 through column 8, line 67 of Keppeler.

Appellants acknowledge that Sicken shows component (b) of representative claim 1 (brief, page 4) while inconsistently arguing that Sicken teaches away from that very same oligomeric

component in that the claimed hydroxyl number requirement (no more than about 30 mg KOH/g) is different than Sicken's disclosure of "a hydroxyl number of 30-300 mg of KOH/g." See column 4, lines 39-41 of Sicken and page 4 of appellants' brief.

Manifestly, that argument is ineffectual because Sicken discloses a corresponding oligomeric flame retardant with overlapping hydroxyl number values as compared to that called for in representative claim 1. In this regard, it is well settled that when ranges recited in a claim overlap with ranges disclosed in the prior art, a prima facie case of obviousness typically exists and the burden of proof is shifted to the applicants to show that the claimed invention would not have been obvious. In re Peterson, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003); In re Geisler, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990). Against that backdrop, the mere assertion of a "teaching away" by appellants based on the overlapping hydroxyl value ranges of Sicken relative to that claimed at herein hardly suggests, much less establishes, that Sicken follows a divergent path from that called for in representative claim 1, as urged by appellants. See In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).

It follows that the argued difference in desired reactivities of oligomeric component (b) of representative claim 1 and the corresponding oligomeric flame retardant of Sicken is not persuasive given that overlap in hydroxyl number of the oligomeric flame retardants of Sicken and that claimed at here.[2]

Concerning flame retardant component (a) of representative claim 1, appellants acknowledge that Sicken provides a "vague indication" that another flame retardant can be employed together with the oligomeric flame retardant described by Sicken. See page 4 of the brief. In fact, Sicken expressly teaches that the oligomeric flame retardant thereof can be employed "as a mixture with other flameproofing agents...." See column 4, lines 31-37 of Sicken. The examiner relies on Keppeler to show that an additional flame retardant of the type recited in component (a) of representative claim 1 would have been an obvious selection to one of ordinary skill in the art for another flame proofing agent to be used in Sicken (answer, page 7, first and second full paragraphs).

Appellants do not dispute the examiner's determination that Keppeler evidences that a non-oligomeric, non-halogenated

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[2] That argument is seemingly based on the hydroxyl number limitation of representative claim 1. See page 4 of the brief.

phosphate ester is an available flame retardant for polyurethane foams. Rather, appellants (brief, page 5) urge that there are so many choices of an additional flame retardant available to one of ordinary skill in the art disclosed by Keppeler, that one of ordinary skill in the art would not find sufficient direction to have been led to the non-oligomeric, non-halogenated phosphate esters of Keppeler as an additive flame retardant for Sicken. In this regard, appellants maintain that Keppeler suggests a preference for "aminomethylated phosphonic acid esters" (brief, page 5).

We do not agree with appellants' argument. While there must be some teaching, reason, suggestion, or motivation to add one of the non-oligomeric, non-halogenated phosphate ester flame retardants of Keppeler to the composition of Sicken, it is not necessary that the cited references explicitly teach a preference for that particular combination. Rather, the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). The disclosure by Keppeler of a preferred embodiment does not teach away from the entire disclosure of the

patent, all of which must be considered in the analysis of obviousness. See In re Burckel, 592 F.2d 1175, 1179, 201 USPQ 67, 70 (CCPA 1979). In evaluating such references it is proper to take into account not only the specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

Here, we determine that there is ample motivation in the combined teachings of the references to have modified the product of Sicken to include another flame retardant comprising a non-oligomeric, non-halogenated phosphate ester as taught by Keppeler with a reasonable expectation of success in achieving a product corresponding to appellants' product. See In re O'Farrell, 853 F.2d 894, 903-904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). This is so since it would have been well within the ordinary skill in the art to combine two well known flame retardants as explained by the examiner, each of which is taught by the prior art to be useful for the purpose of enhancing flame retardant properties of polyurethane foams, to form a mixture thereof to be used for the very same purpose and for achieving at least the additive effects of each. See In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Furthermore, it is beyond dispute that Sicken suggests that further flame retardants may be employed in combination with an oligomeric flame retardant. Moreover, Keppeler (column 8, lines 57-62) lists several alkyl-group containing phosphate esters among a small list (10) of exemplified additional unreactive flame proofing agents that may be used. Hence, we agree with the examiner that a skilled artisan would have been led to use the alkyl-group containing phosphate esters of Keppeler in combination with the oligomeric flame retardant of the primary reference where additional unreactive halogen-free flame proofing agents are desired in the polyurethane foam product.[3]

Consequently, we determine that the examiner has furnished a sufficient basis to establish the obviousness, within the meaning of 35 U.S.C. § 103(a), of appellants' claims 1-3, 5-7, 9-11 and 13 over Sicken and Keppeler.

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[3] We note that the teachings of Keppeler with respect to flame proofing agents useful in foams are not limited to the preferred phosphonic acid esters mentioned at column 8, lines 7-11 of the patent as argued by appellants at page 5 of the brief. Moreover, given that representative claim 1 employs open "contains" language, appellants' argument suggesting that one of ordinary skill in the art would be led to employ such a preferred flame proofing agent does not establish why one of ordinary skill in the art would not also select an alkyl-group containing phosphate ester as additionally taught by Keppeler and arrive at the claimed subject matter.

As for the examiner's separate § 103(a) rejection of claims 1-3, 5, 6 and 9-11 over the applied Fearing patents in combination with Keppeler, we shall also affirm that rejection for reasons substantially analogous to those discussed above with respect to the examiner's obviousness rejection over the combination of Sicken and Keppeler with respect to representative claim 1. In this regard, we note that both of the applied Fearing patents teach or suggest the use of oligomeric organophosphate/phosphonate flame retardants with polyurethane foams having overlapping hydroxyl numbers to that recited in representative claim 1 and each Fearing patent teaches that other flame retardants can be used in addition to those oligomeric flame retardants as was found by the examiner at page 5 of the answer. Consequently, the teachings of Keppeler as to the available choices for an additional flame retardant are combinable with either applied Fearing patent for reasons set forth in the answer and for reasons analogous to those discussed above with respect to the Sicken patent.

Likewise, appellants' arguments against the examiner's rejection over either of the applied Fearing patents in combination with Keppeler are not persuasive for reasons set forth in the answer and for reasons analogous to those discussed

above with respect to the rejection over Sicken and Keppeler.

Concerning the obviousness rejection employing the applied Fearing patents, appellants also argue that each of the applied Fearing patents include phosphonate linkages in the poly(oxyorganophosphate/phosphonate) thereof, which linkages "are not present in the oligomeric species intended for use by the applicants" (reply brief, page 2). However, that argument does not specify why representative claim 1 would exclude phosphonate linkages being present in an organophosphate flame retardant. As ascertained by the examiner at page 5 of the answer, the compounds of the Fearing patents include phosphate groups and are properly referred to as organophosphates. Indeed, as set forth at page 5 of appellants' specification, "phosphonate/phosphate compositions are intended to be included" in appellants' invention. Here, giving the term "organophosphate" as used in representative claim 1, the broadest reasonable construction as it would be understood by one of ordinary skill in the art, we find ourselves in agreement with the examiner's position. Appellants have not fully explained, much less fairly established, how the language of representative claim 1 would be construed by one of ordinary skill in the art in a manner so as to exclude flame retardants that include phosphonate linkages in

addition to phosphate groups as the examiner has determined to be taught by either Fearing patent.

It follows that we will sustain the examiner's obviousness rejection over either applied Fearing patent in view of Keppeler for reasons discussed above and in the answer.

As for the examiner's separate § 103(a) rejection of dependent claims 7, 8, 13 and 14 employing Hardy '042 or Hardy '035 in addition to Sicken and Keppeler, appellants do not separately argue each rejected claim. Consequently, we select claim 7 as the representative claim on which we shall decide this appeal as to that ground of rejection. We note that representative claim 7 does not exclude the presence of hydroxy alkyl groups in the oligomeric organophosphate.

We also note that appellants argue that Hardy '042 or Hardy '035 do not cure the deficiencies of Sicken, Fearing '534 or Fearing '633, each further in view of Keppeler. However, for reasons as stated above, we do not agree with appellants' contentions that the combined teachings of Sicken, Fearing '534 or Fearing '633, each further in view of Keppeler are deficient. Consequently, that argument is not persuasive.[4]

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[4] Moreover, we note that the examiner's § 103(a) rejection employing either Hardy patent includes all of the references

We are mindful that Sicken (at column 2, lines 11-31) discusses one of the applied Hardy patents (U.S. Patent No. 4,458,035) and, at least in appellants' view, suggests disadvantages therewith. However, we are not persuaded by appellants' argument that such disclosure would have taught away from the herein claimed combination of flame retardants when the applied references are considered, in combination, for the reasons set forth above and in the answer. Appellants furnish no compelling rationale or evidence explaining how any alleged disadvantage of Hardy '035 that may be related in Sicken would have discouraged an ordinarily skilled artisan from following the particular combination of reference teachings that collectively suggest employing a combination of phosphorous compounds. In this regard, representative claim 7 is not limited to employing only hydroxy alkyl oligomers or only non-hydroxy alkyl oligomers in the claimed foam.

Hence, for the reasons discussed above, we determine that the examiner has furnished a sufficient evidentiary basis to

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applied in the § 103(a) rejection over Sicken and Keppeler and appellants did not furnish arguments establishing that claim 7 should not stand or fall together with claim 1 with respect to the latter ground of rejection.

establish the obviousness, within the meaning of 35 U.S.C. § 103(a), of appellants' claims 7, 8, 13 and 14.

As a final point, we note that appellants have not based their argument on a showing of unexpected results.

Having reconsidered all of the evidence of record proffered by the examiner and appellants, we have determined that the evidence of obviousness, on balance, outweighs the evidence of nonobviousness. Hence, we conclude that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art. Accordingly, we affirm the examiner's decision rejecting all of the claims on appeal under 35 U.S.C. § 103(a) over the applied prior art.

CONCLUSION

The decision of the examiner to reject claims 1-3, 5, 6 and 9-11 under 35 U.S.C. § 103(a) as being unpatentable over Fearing '534 or Fearing '633, each further in view of Keppeler; to reject claims 1-3, 5-7, 9-11 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Sicken in view of Keppeler; and to reject claims 7, 8, 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Sicken in view of Keppeler and Hardy '042 or Hardy '035 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

PETER F. KRATZ)
Administrative Patent Judge)
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CATHERINE TIMM) BOARD OF PATENT
Administrative Patent Judge) APPEALS
) AND
) INTERFERENCES
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BEVERLY A. FRANKLIN)
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